NASA Glenn
Plum Brook Station

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Decommissioning NEWS
Plum Brook Station

A quarterly newsletter to inform the public about NASA's Decommissioning Activities

The Community Information Session: A Chance for Folks to Meet

Three generations of Erie County residents - high school students, homeowners and retirees - were represented last October 16, when NASA held its fourth annual Community Information Session (CIS) on the Decommissioning Project. Thanks to the generosity of Perkins High School principal (and Community Workgroup member) Chris Gasteier, the event was held once again in the school's cafeteria.

NASA's Sally Harrrington gave a presentation to an attentive audience.

Several attendees viewing displays.

NASA Decommissioning Project Manager Tim Polich does some teaching with a Perkins High school student.

Bobby Cooper of NASA contractor Montgomery Watson Harza talks with a visitor.

Visitors had an opportunity to view a variety of new displays - staffed by members of the Decommissioning Team, including Project Manager Tim Polich. They could also view a video on the project and see and hear a slide presentation narrated by Sally Harrington of NASA's Community and Media Relations Office, updating folks on decommissioning activities and plans. Workgroup members were also on hand to greet visitors and share their project experiences. Finally, as part of NASA's efforts to document and preserve the Reactor Facility's history, Dr. Mark Bowles, a historian working on the project, interacted with folks at a photographic display showing the facility when it was operational.

As this was the first CIS since decommissioning began last March, NASA went to great lengths to let people know about it. In addition to advertising in newspapers and on area radio stations, NASA reached out to 74 community groups; from Parent Teacher Organizations in Perkins and Sandusky to environmental and civic organizations throughout Erie County. Huron resident Len Homyak, a former Reactor Facility worker who has attended nearly every project event, noted the number of new faces. NASA is "getting people off the streets now. They saw the advertisements and heard the radio." He also felt the displays were effective in communicating about the Decommissioning Project "for people not familiar with the project."

Sandusky resident Ray Ruffing was attending his first CIS. His Men's Senior Fellowship organization received flyers on the event and he was pleased, noting, "I was able speak to different (NASA) people - you were free to talk to anyone if you had questions."

Evaluation forms completed by attendees indicated that people were satisfied with what they saw and heard - and that they learned a lot. While fully half of those completing the forms said they knew nothing about the project before attending, all felt they had learned something about decommissioning; and more than 60% felt they now knew "a lot." There was also nearly unanimous agreement that NASA staff had listened carefully to their questions and clearly answered them. NASA's Polich was also pleased with the evening, observing, "I was impressed by the questions people asked and their interest in the Decommissioning. This was an opportunity to see some old friends and make some new ones - and increase the community's understanding about the project." ■

WHAT'S INSIDE

Other ways to receive Decommissioning INFORMATION

FACT SHEETS
Since June 1999, NASA has produced fact sheets dealing with various aspects of Decommissioning. Copies are available at public libraries throughout Erie County, at the Community Information Bank at the BGSU Firelands Library, on our Decommissioning Website at www.grc.nasa.gov/WWW/pbrf and by calling our Information Line at 1-800-260-3838.

COMMUNITY INFORMATION BANK
NASA has established a Community Information Bank (CIB) at the BGSU Firelands Library. The CIB serves as a permanent repository of information on the Decommissioning Project which NASA continually updates. All information at the CIB is available to the public upon request.

DECOMMISSIONING WEBSITE
Decommissioning information is available on-line. Visit us at www.grc.nasa.gov/WWW/pbrf

SPEAKERS
NASA will provide speakers upon request to civic, community and school organizations throughout Decommissioning. A video or slide presentation may be presented. For further information, contact Sally Harrington through our Information Line at 1-800-260-3838, her direct line at 216-433-2037, or at s.harrington@grc.nasa.gov.

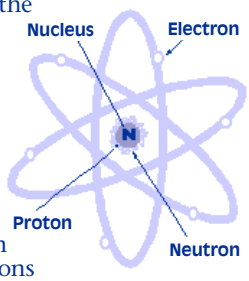
Radiation Primer

Central to the discussion of decommissioning is the understanding of radiation. The following article provides an introduction to the subject of radiation, radioactive substances and radioactivity.

> Radiation is the excess energy an atom emits to achieve stability.

What is Radiation?

Radiation is the movement of energetic waves or particles through space. Radiation can be either non-ionizing or ionizing. Non-ionizing radiation includes visible light, microwaves, radio waves and radar. Ionizing radiation has higher energy and the potential to cause damage to living cells in the human body. To understand ionizing radiation, it is helpful to look at the structure of an atom.



Everything is made of atoms. Every substance on Earth is made up of combinations of the 92 atoms (listed in the Periodic Table) that are found in nature. Inside every atom are three subatomic particles: protons, neutrons and electrons. Protons have a positive charge while neutrons with a neutral charge act as the "glue" to hold the protons tightly together in the nucleus of the atom. The negatively charged electrons surround and orbit the nucleus. Atoms can come in different forms (the same number of protons with differing numbers of neutrons) and are called isotopes. Protons and electrons have opposite charges and therefore attract one another. In most cases the number of electrons and protons are the same for an atom - making the atom neutral in charge, or stable.

Radioactive Substances

In a radioactive substance the atomic structure is not stable - it is always changing. To become stable, the atom must give off its excess energy. Radiation is the excess energy an atom emits to achieve stability. The excess energy (radiation) given off can be in the form of subatomic particles (alpha, beta, or neutron) or gamma rays - all of which are known as ionizing radiation. The process that an atom goes through to become stable is referred to as radioactive decay. All radioactive atoms decay eventually - taking from a fraction of a second to millions of years, depending on the specific isotope. A half-life is the measure of the time it takes for half of the radioactive atoms in a substance to decay to another form.

Radioactivity

The term "radioactivity" refers to the condition of an element. It is the emission of particles by some atoms when their unstable nuclei disintegrate. Materials composed of such atoms are called radioactive substances. All of us are exposed to radiation all of the time, because there are a number of naturally occurring radioactive substances. They include radon and cosmic rays from the sun and outer space, the earth's rocks and soils, and even the food we eat (potassium is an essential mineral for life and is naturally radioactive) and water we drink. Radiation can also come from man-made radioactive substances that are used in a variety of applications - research in agriculture, medicine and space flight (as in the Reactor Facility) as well as the manufacture of consumer goods such as smoke detectors, televisions and sterilized cosmetics. Radioactivity is a measure of the amount of radioactive substance present.

In the Reactor Facility

The residual radioactivity that still remains in the Reactor Facility is a byproduct or result of research that was conducted on materials used for space flight. Though fuel was removed after the Reactor Facility closed in 1973 and short half-life radioactive materials have already significantly decayed, sources of radioactivity remain - primarily in the reactor vessel. The remaining radioactivity is dispersed in materials or places where it is not wanted. Fixed contamination is embedded in some of the concrete and other structural components and equipment. Loose contamination exists and is much like surface dust. Close to the reactor core, where material was bombarded with high enough radiation (during operations), some of the original material was changed into something that is itself radioactive.

We cannot detect ionizing radiation with our senses but it can be measured in very, very small amounts using a number of different instruments. By measuring the amount of radioactivity present, we can take necessary precautions to avoid or minimize exposure to radiation during decommissioning. A thorough investigation of all sources of radioactivity is being conducted throughout decommissioning to plan for safe handling, packaging, shipping and all disposal options for the existing radioactive waste.

NASA's Commitment to Safety

NASA's comprehensive Radiation Safety Program provides engineering controls and strict administrative procedures to prevent or minimize radiation exposure. Environmental monitoring (air, sediment, groundwater and surface water sampling) will continue throughout decommissioning to ensure that radiation levels (estimated to be extremely low) remain below levels set to protect the public, the workers, and the environment. ■

DECOMMISSIONING UPDATE

Work crews removed piping from the cryogenic trench in preparation for installation of the cask transfer system.

In the intricately designed and specially sequenced flow of decommissioning work, the term "critical path" is used to refer to the job that must get done before certain other ones can begin. Over the last few months, the Decommissioning Team has focused on work that is critical path for the arrival of WACHS Technical Services - the subcontractor conducting segmentation and removal of the reactor internals and reactor vessel.

One of the three shrapnel shields is lifted from the opening of the reactor vessel to confirm radiation readings.

Last fall, in preparation for segmentation, crews lifted the three shrapnel shields (each weighing 20 tons) at the entrance to the reactor vessel to confirm estimated radiation readings. According to Tim Polich, NASA Decommissioning Project Manager, "The readings came in at the low end of our predicted values."

Part of the process ventilation system being delivered to the Reactor Facility site for installation.

The completion of asbestos and lead abatement in portions of the Reactor Facility last fall paved the way for installation of the cask transfer system. Waste generated from segmentation (scheduled to begin in February and take approximately 18 months) will be safely stored inside the containment vessel until the shipping casks arrive onsite. The cask transfer system's large capacity crane and "trolley tracks" are being used to move the waste liners into the building for loading, and back outside to awaiting casks for shipping to a licensed disposal or reprocessing facility.

NASA also successfully completed the Reactor Internals Investigation, which will also provide significant information to support the planning and execution of segmentation activities.

An important step in preparing for segmentation was installing several engineering controls, designed to minimize the generation of airborne material and ensure that everything stays onsite. Last year, a process ventilation system was installed that will be used inside the containment enclosure (a temporary tent that surrounds the reactor) during segmentation. It filters air through a series of 16 HEPA (High Efficiency Particulate Air) filters and maintains a negative air pressure. Air is drawn from outside, constantly re-circulated, and filtered of airborne contamination before being released outside.

"It has been a very busy few months," said Tim Polich. "Our decommissioning workers had a well-deserved break during the holidays. We're refreshed and look forward to a new year of safe and productive activity." ■

COMMUNITY WORKGROUP MEMBER PROFILE

Rick Graham

Given his environmental background and old family ties to NASA, it would be surprising if Rick Graham were not a Community Workgroup member. The Monroeville resident works for the Izaak Walton League, promoting open space, farmland preservation and conservation. He's also a substitute science teacher at Monroeville and Western Reserve High Schools.

Once the son-in-law of a former NASA chemistry scientist, Rick remembers when the Plum Brook Station Reactor Facility shut down for fiscal reasons. He joined the Workgroup in 2001, and describes it as "a format allowing community members to access more detailed information," adding that Workgroup members must "be there to react to issues as they are presented."

The Ohio State graduate believes his background - including hazardous materials training - enables him to "provide a good resource in monitoring" decommissioning for the community. He frequently receives questions from the public "at church and when I teach." Observing that "There are many people who are still quite ignorant about the (reactor) site," Rick says Workgroup members "can be a bridge to them. Some people think decommissioning is taking the (nuclear) fuel out of the facility and is a high hazard situation." He welcomes the opportunity to educate community members, letting them know "the fuel has been out for years" while adding "the hazards are very low. NASA makes sure of that." He admits to having concerns about safety until taking part on a Reactor Facility tour with Workgroup members last April, saying it "convinced me that decommissioning is safe."

Rick believes a supplement published last May in the Sandusky Register and Norwalk Reflector - which includes a Workgroup article - was "a good format for allowing people to talk to us." After publication, "four or five neighbors approached me...Our names are getting out there now," thus providing an opportunity for two-way communication. He has also been impressed by the interest shown by students, including those attending last October's Community Information Session at Perkins High School. Rick supports more outreach to schools, noting, "This project is good exposure to practical knowledge in science and technology." He thinks the upcoming documentary video on the Reactor Facility will be "a major item" of interest to school and community groups.

When decommissioning is complete, Rick hopes NASA will allow more access to the land at Plum Brook Station and use it as open space and "a hunting resource and wildlife area." Meanwhile, he'll continue sharing information with the community, concluding, "NASA goes to extremes to make sure there is nothing to affect the safety of the community." ■

VISIT US ON-LINE
You can find our Decommissioning Website at www.grc.nasa.gov/WWW/pbrf

Topics in Upcoming Issue
Project update: segmentation operations
More on radiation and radioactivity
Workgroup member profile

NASA **STRESSING SAFETY,** NOT HASTE, IN DISPOSING OF WASTE

Some frequently asked questions we hear include how much waste from decommissioning there is and where it will go. During the project, NASA expects to dispose of about 132,000 cubic feet of dry, solid, low-level radioactive waste. This means an average of one to two truck shipments per week during the peak period of decommissioning, in 2003 and 2004, as NASA ships segmented pieces of the reactor internals and tank to licensed disposal and reprocessing facilities.

The two licensed disposal facilities available to NASA are Chem Nuclear in Barnwell, S.C. and Envirocare in Clive, Utah. Chem Nuclear accepts three classes of low-level radioactive waste: Classes A, B and C, while Envirocare accepts only Class A waste (which has the lowest levels of radioactive isotopes). According to NASA Senior Project Engineer Keith Peecook, about 95% of the Reactor Facility waste is Class A, around 5% is Class B and less than 1% is Class C. The Class C waste is located within the reactor tank and internal components. This waste will be removed during the segmentation process that begins in February 2003. The cut pieces of components containing Class C waste will shipped to Barnwell in a special Cask container.

NASA will also send some waste to reprocessing facilities, where lightly contaminated materials can be recycled or the volume of material for ultimate disposal reduced. “Reprocessing some of the waste makes sense,” says Sheryl Leeper, Environmental Engineer for the U.S. Army Corps of Engineers. “Since disposal costs are based on volume and not weight, reprocessing saves money for NASA and valuable space at licensed facilities.” During pre-decommissioning, NASA sent one truckload of waste to the Alaron reprocessing facility in Pennsylvania. In addition to Alaron, NASA will consider sending waste to two other facilities, Duratek and US Ecology (both in Tennessee) and is gathering information from the reprocessors. NASA will conduct engineering evaluations to consider the cost, safety and schedule, in order to determine the best options for reprocessing and disposal.

NASA will coordinate all waste shipments with local public safety agencies, including the Erie County Emergency Management Agency and the Perkins Police Department, in advance of planned shipments; coordinating the optimal time of day, and day of the week for truck departures in order to minimize the impact on local traffic throughout the project. During pre-decommissioning, NASA utilized roads within Plum Brook Station to the Scheid Road gate (then down U.S. 250 to the Ohio Turnpike) to minimize the amount of time that the truck spent on local roads. For security purposes, NASA will not provide exact shipment information to the public but will provide general schedule information and note when the shipments have been completed. NASA will also share this information with Community Workgroup members and include shipment updates on our 24-hour, toll-free Information Line at 1-800-260-3838. The next shipment is scheduled for sometime this spring. ■

NASA Glenn
Plum Brook Station
6100 Columbus Avenue
Sandusky, Ohio 44870

Community Workgroup Meeting
TUESDAY, JANUARY 28, 7 p.m.
Saint John's United Church of Christ (Auditorium)
2712 W. Mason Road, Oxford Township
(Approximately 2 miles west of U.S. 250)

The meeting is open to the public